Phenomena of Jupiter's Satellites.

Day.	Satellite.	Phenomenon.		Telescope.	Power.	Mean Solar Time of Observation. h m s	Mean Solar Time of N.A. h m s	Observer.
1889 Apr. 22 (*a*)	III.	Ecl. D.	Last seen	E. Equat.	140	14 5 25	14 4 35	J. P.
May 21 (*b*)	I.	Occ. R.	Last contact	Lassell Refl.	280	13 22 0	13 20 0	H. T.
29 (*c*)	I.	Tr. Egr.	First contact	Altaz.	100	12 11 34	12 13 0	A. D.
29	I.		Last contact	,,	,,	12 14 53		,,
31 (*d*)	II.	Occ. R.	First seen	Lassell Refl.	280	13 56 7	13 56 0	H.
31	II.		Full brightness	,,	,,	14 4 47		,,
June 4	I.	Ecl. D.	Began to fade	,,	,,	14 5 40	14 7 23	,,
4	I.		Last seen	,,	,,	14 7 50		,,
July 6	I.	Occ. D.	First contact	Corbett Refr.	110	10 16 8		A. D.
6	I.		Bisection	,,	,,	10 19 22		,,
6	I.		Last seen	,,	,,	10 22 28		,,
6 (*e*)	I.		First contact	Lassell Refl.	280	10 17 45	10 22 0	L.
6	I.		Bisection	,,	,,	10 19 55		,,
6	I.		Last seen	,,	,,	10 22 30		,,
15	I.	Ecl. R.	First seen	Altaz.	100	9 18 6	9 17 28	T.

Day.	Satellite.	Phenomenon.	Telescope.	Power.	Mean Solar Time of Observation.	Mean Solar Time of N.A.	Observer.
					h m s	h m s	
1889 July 18	II.	Tr. Egr. First contact	Lassell Refl.	280	11 34 9		A. D.
18	II.	Bisection	,,	,,	11 35 39	11 37 0	,,
18	II.	Last contact	,,	,,	11 38 13		,,
Aug. 6	I.	Tr. Egr. First contact	Altaz.	100	11 13 54	11 16 0	T.
6	I.	Last contact	,,	,,	11 17 39		,,
15	III.	Ecl. R. First seen	Lassell Refl.	280	8 34 35		H. T.
15 (*f*)	III.	First seen	E. Equat.	200	8 35 27		C.
15	III.	Full brightness	,,	,,	8 37 57	8 37 16	,,
15 (*g*)	III.	First seen	Altaz.	100	8 36 30		J. P.
15	III.	Full brightness	,,	,,	8 38 37		,,
28	II.	Ecl. R. First seen	,,	,,	9 18 30	9 17 47	L.
28	II.	Full brightness	,,	,,	9 19 38		,,
29	III.	Occ. D. First contact	,,	,,	8 55 4	8 46 0	S. D.
29	III.	Last seen	,,	,,	8 57 54		,,
Sept. 6	I.	Occ. D. First contact	Lassell Refl.	280	8 2 44		A. D.
6	I.	Bisection	,,	,,	8 5 1	8 8 0	,,
6	I.	Last seen	,,	,,	8 7 23		,,
12 (*h*)	IV.	Tr. Egr. Last contact	E. Equat.	210	7 26 31	7 38 0	A. D.

Day.	Satellite.	Phenomenon.	Telescope.	Power.	Mean Solar Time of Observation. h m s	Mean Solar Time of N.A. h m s	Observer.
1889 Oct. 7 (*i*)	I.	Tr. Ing. Bisection	E. Equat.	140	7 25 20		H.
7	I.	Last contact	,,	,,	7 28 0		,,
7 (*k*)	I.	First contact	Altaz.	100	7 21 18	7 29 0	A. P.
7	I.	Bisection	,,	,,	7 24 8		,,
7	I.	Last contact	,,	,,	7 27 17		,,

Notes.

(*a*) *Jupiter* diffused. (*b*) Definition too poor to permit observation of "First Seen." The satellite was well clear of *Jupiter* at $13^h\ 23^m\ 30^s$.

(*c*) *Jupiter* very tremulous and ill-defined. Observation uncertain.

(*d*) Observation *very* uncertain; limb of *Jupiter* boiling.

(*e*) Satellite very faint; cloudy.

(*f*) Clouds passing.

(*g*) Suspected at $8^h\ 35^m\ 53^s$.

(*h*) Satellite very faint; not noticed until near last contact.

(*i*) Image not good.

(*k*) Satellite faint; *Jupiter* diffused.

The clear aperture of the mirror of the Lassell Reflector is 24 inches, of the object-glass of the E. Equatorial 6·7 inches, of the Corbett Refractor $6\frac{1}{2}$ inches, and of the Altazimuth $3\frac{3}{4}$ inches.

The initials H. T., C., A. D., T., L., H., J. P., A. P., S. D., and W. R., are those of Mr. Turner, Mr. Criswick, Mr. Downing, Mr. Thackeray, Mr. Lewis, Mr. Hollis, Mr. Power, Mr. A. Pead, Mr. Dolman, and Mr. Russell respectively.

Ephemeris of the Satellites of Uranus, 1890. By A. Marth.

Greenwich Noon. 1890.			*Ariel.*			*Umbriel.*		
		P	a_1	b_1	u_1-U	a_2	b_2	u_2-U
		°	″	″	°	″	″	°
Feb.	26	281·31	14·88	+9·52	101·55	20·74	+13·27	223·16
Mar.	8	·39	14·98	9·53	89·94	20·87	13·28	11·85
	18	·49	15·06	9·52	78·29	20·99	13·26	160·51
	28	·60	15·12	9·48	66·61	21·07	13·21	309·15
Apr.	7	·72	15·16	9·42	54·91	21·11	13·12	97·76
	17	·84	15·16	9·33	43·19	21·12	13·00	246·37
	27	281·95	15·15	9·23	31·44	21·10	12·86	34·96
May	7	282·06	15·10	+9·12	19·67	21·04	+12·71	183·54
	17	·15	15·03	9·01	7·89	20·95	12·55	332·12
	27	·23	14·95	8·89	356·10	20·82	12·39	120·70
June	6	·29	14·84	8·78	344·31	20·68	12·24	269·28
	16	·33	14·73	8·68	332·52	20·52	12·09	57·87
	26	·34	14·60	8·59	320·74	20·34	11·97	206·47
July	6	·33	14·47	8·52	308·97	20·16	11·86	355·09
	16	282·31	14·34	+8·46	297·22	19·98	+11·78	143·72

		Titania.			*Oberon.*				
		a_3	b_3	u_3-U	a_4	b_4	u_4-U	U	B
		″	″	°	″	″	°	°	°
Feb.	26	34·01	+21·76	138·97	45·48	+29·10	2·62	359·72	+39·78
Mar.	8	34·24	21·78	192·45	45·79	29·14	269·97	359·78	39·51
	18	34·42	21·75	245·91	46·03	29·09	177·30	359·86	39·19
	28	34·56	21·66	299·35	46·21	28·96	84·62	359·94	38·82
Apr.	7	34·63	21·51	352·78	46·32	28·77	351·93	0·03	38·41
	17	34·65	21·32	46·21	46·34	28·52	259·24	0·12	37·99
	27	34·61	21·10	99·63	46·28	28·22	166·54	0·21	37·57
May	7	34·51	+20·85	153·05	46·15	+27·88	73·85	0·29	+37·17
	17	34·36	20·59	206·47	45·94	27·53	341·16	0·36	36·82
	27	34·16	20·32	259·90	45·68	27·18	248·48	0·42	36·52
June	6	33·92	20·06	313·34	45·37	26·84	155·81	0·46	36·28
	16	33·65	19·83	6·79	45·00	26·53	63·16	0·48	36·12
	26	33·36	19·63	60·26	44·62	26·25	330·52	0·49	36·04
July	6	33·07	19·46	113·75	44·22	26·02	237·90	0·48	36·04
	16	32·77	+19·32	167·25	43·82	+25·84	145·30	0·45	+36·13

The values of P, a, b, $u-U$ are to be interpolated for the times for which the apparent positions of the satellites are